

## Integration of Continuous Commissioning® as a Measure in LoanSTAR and Energy Services Contracts

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### ABSTRACT

Continuous Commissioning® (CC®) is a process that resolves operating problems, optimizes the HVAC system operation and controls to reduce building energy consumption and improve comfort based on current building conditions and requirements. The process typically achieves 15% whole building energy cost reduction with simple paybacks of less than two years. It has been used in over 450 federal, institutional, university, and commercial buildings and central plants with measured savings of over \$100 million and 12.5 trillion Btus in primary energy since 1993.

Although the CC® process has been used primarily as a stand-alone application, it can be integrated with capital retrofit projects. With its attractive payback and relatively large savings, it allows the owners to purchase more large capital items such as chillers or new building automation systems and still meet their payback criteria. Another advantage of integrating the CC® process with a retrofit project is to optimize the operation of the newly installed equipment to ensure the savings target can be achieved. In 2000 the Texas State Energy Conservation Office began to allow Continuous Commissioning® as an Energy Cost Reduction Measure (ECRM) within the LoanSTAR program, a \$98 million revolving loan program for energy efficiency retrofit projects in public buildings.

This presentation discusses two case studies where CC® was integrated into the retrofit program. The first is the LoanSTAR project at Prairie View A&M University, the first state agency to take advantage

of the CC® within LoanSTAR. The program included lighting retrofits, chiller replacements, DDC system upgrades, steam system repairs, conversion to variable primary chilled water pumping, and Continuous Commissioning®, etc. Of the nearly \$700,000 projected annual savings, CC® accounted for about 30%. When the initial savings results were presented, the university administrators purchased one additional chiller (19.8-year payback) and still had their loans meet the ten-year or less payback criteria.

The second is an energy service company (ESCO) project at Austin-Bergstrom International Airport. Major retrofits included lighting upgrades and control, chiller and boiler replacement, DDC upgrades, motor replacement, water conservation, and Continuous Commissioning® of the main terminal and central plant, including the thermal storage system. Again, CC® accounted for approximately 30% of the overall projected savings.

During the design phase, CC® engineers conducted the CC® assessment while the design engineering firm or the ESCO conducts the energy retrofit audit. Because the two approaches are different and look at different opportunities, it is very important to closely coordinate these two audits. It is also likely that some overlapping of the savings estimate may occur. Therefore, care must be taken to avoid double counting the savings. This is especially true when it comes to estimating the savings from DDC system upgrades. This presentation shares our

experience and lessons learned while integrating CC<sup>®</sup>  
as a measure in LoanSTAR and ESCO projects.